CLAIMS

I claim:

1. A heat-insulating and soundproofing lining for the engine compartment of a motor vehicle, comprising:

a first covering layer facing the engine;

a duroplastic foam layer in contact with the covering layer;

soundproofing layer in contact with the duroplastic foam layer, the soundproofing layer selected from the group consisting of plastic foam, particle composite foam, and a web consisting at least one of natural fibers and synthetic fibers; and

a second covering layer in contact with the soundproofing layer.

2. The heat-insulating and soundproofing lining of claim 1, wherein the duroplastic foam layer has a long-term thermal stability up to 180°C, a long-term thermal loadability at 200°C of three weeks and a thickness of less than 5 mm.

3. The heat-insulating and soundproofing lining of claim 1, wherein the natural fibers and synthetic fibers are needled.

4. The heat-insulating and soundproofing lining of claim 1, wherein the natural fibers and synthetic fibers are non-needled.

5. The heat-insulating and soundproofing lining of claim 1, wherein the first covering layer comprises at least one of a polyester web, a glass fiber web, a carbon fiber web, a ceramic fiber web, and a mineral fiber web.

6. The heat-insulating and soundproofing lining of claim 1, wherein the second covering layer comprises at least one of a polyester web, a glass fiber web, a carbon fiber web, a ceramic fiber web, and a mineral fiber web.

7. The heat-insulating and soundproofing lining of claim 1, wherein the second covering layer comprises at least one of a thin needle-punched nonwovens and spunbonded nonwovens.

8. The heat-insulating and soundproofing lining of claim 1, wherein the second covering layer has in a weight per unit area from 30 to 200 g/m^2.

9. The heat-insulating and soundproofing lining of claim 1, wherein the duroplastic foam layer comprises a flexible, open-cell foam of melamine resin.

10. The heat-insulating and soundproofing lining of claim 1, wherein the plastic foam of the sound-absorbing layer has a volumetric weight from about 6 to about 30 kg/m^2.

11. The heat-insulating and soundproofing lining of claim 1, wherein the particle composite foam of the sound-absorbing layer has a volumetric weight from about 30 kg/m^2 to about 250 kg/m^2.

12. The heat-insulating and soundproofing lining of claim 1, wherein the nonwoven fabric of the sound-absorbing layer has a volumetric weight from about 800 g/m^2 to about 2000 g/m^2.

13. The heat-insulating and soundproofing lining of claim 1, wherein the sound-absorbing layer has a thickness of less than 20 mm.

14. The heat-insulating and soundproofing lining of claim 13, wherein the sound-absorbing layer has a thickness of less than 10 mm.

15. The heat-insulating and soundproofing lining of claim 1, wherein at least one of the duroplastic foam layer and the soundproofing layer has a grid-like shaping.

16. The heat-insulating and soundproofing lining of claim 1, wherein the grid-like shaping is near a boundary surface of the at least one layer.

17. The heat-insulating and soundproofing lining of claim 1, further comprising:

a metal foil located in an area of increased thermal load.

18. The heat-insulating and soundproofing lining of claim 1, wherein at least two of the first covering layer, the duroplastic foam layer, the soundproofing layer, and the second covering layer are joined by an adhesive layer.

19. The heat-insulating and soundproofing lining of claim 17, wherein at least two of the first covering layer, the duroplastic foam layer, the soundproofing layer, the second covering layer, and the metal foil are joined by an adhesive layer.

20. A method for manufacturing a heat-insulating and soundproofing lining for the engine compartment of a motor vehicle, comprising:

providing a first covering layer;

providing a duroplastic foam layer on the first covering layer;

providing a soundproofing layer on the first covering layer;

providing a second covering layer;

pressing the layers together at an increased temperature and an increased pressure.

21. The method of claim 20, further comprising:

providing an adhesive between at least two of the layers.

22. The method of claim 20, further comprising:

providing a metal foil in an area of increased thermal load.

23. The method of claim 20, wherein the duroplastic foam layer has a long-term thermal stability up to 180°C, a long-term thermal loadability at 200°C of three weeks and a thickness of less than 5 mm.

24. The method of claim 20, wherein the soundproofing layer is selected from the group consisting of plastic foam, particle composite foam, and a web consisting at least one of natural fibers and synthetic fibers.